

**WHAT IS CLAIMED IS:**

1. A method comprising:

serially receiving, from a source, a plurality of forward messages each addressed to  
5 one of a plurality of destinations;

receiving a plurality of availability signals, each availability signal indicating that one  
of the destinations is available to accept a forward message;

simultaneously sending a forward message to each available destination;

simultaneously receiving, after a predetermined period of time, a plurality of reverse  
10 messages from the destinations, each reverse message corresponding to one of the forward  
messages simultaneously sent to an available destination; and

serially sending the reverse messages to the source.

2. The method of claim 1, wherein the source identifies each of the forward  
15 messages by a different tag, further comprising:

placing a tag in a delay buffer when sending to a destination the forward message  
identified by that tag, wherein the delay buffer implements a delay equal to the  
predetermined period of time such that the tag is available when receiving from memory the  
reverse message corresponding to the forward message; and

20 sending the tag to the source with the reverse message, whereby the source associates  
the reverse message with the forward message.

3. The method of claim 1, further comprising:

associating a priority with each forward message; and

25 sending a forward message to a destination when that forward message has a higher  
priority than other forward messages addressed to that destination.

4. The method of claim 3, wherein the priority of each forward message  
represents an age of that forward message.

5. The method of claim 1, further comprising:

associating a priority with each reverse message; and  
sending a forward message to the source when that reverse message has a higher  
priority than other reverse messages.

5           6.       The method of claim 5, wherein the priority of each reverse message  
represents an age of that reverse message.

10           7.       The method of claim 1, wherein each destination is a memory bank, each  
forward message is a memory transaction, and each reverse message is the result of one of  
the memory transactions.

15           8.       An apparatus comprising:  
means for serially receiving, from a source, a plurality of forward messages each  
addressed to one of a plurality of destinations;  
means for receiving a plurality of availability signals, each availability signal  
indicating that one of the destinations is available to accept a forward message;  
means for simultaneously sending a forward message to each available destination;  
means for simultaneously receiving, after a predetermined period of time, a plurality  
of reverse messages from the destinations, each reverse message corresponding to one of the  
20 forward messages simultaneously sent to an available destination; and  
means for serially sending the reverse messages to the source.

          9.       The apparatus of claim 8, wherein the source identifies each of the forward  
messages by a different tag, further comprising:

25           means for placing a tag in a delay buffer when sending to a destination the forward  
message identified by that tag, wherein the delay buffer implements a delay equal to the  
predetermined period of time such that the tag is available when receiving from memory the  
reverse message corresponding to the forward message; and

30           means for sending the tag to the source with the reverse message, whereby the source  
associates the reverse message with the forward message.

10. The apparatus of claim 8, further comprising:  
means for associating a priority with each forward message; and  
means for sending a forward message to a destination when that forward message has  
a higher priority than other forward messages addressed to that destination.

11. The apparatus of claim 10, wherein the priority of each forward message  
represents an age of that forward message.

12. The apparatus of claim 8, further comprising:  
means for associating a priority with each reverse message; and  
means for sending a forward message to the source when that reverse message has a  
higher priority than other reverse messages.

13. The apparatus of claim 12, wherein the priority of each reverse message  
represents an age of that reverse message.

14. The apparatus of claim 8, wherein each destination is a memory bank, each  
forward message is a memory transaction, and each reverse message is the result of one of  
the memory transactions.

15. A computer program product, tangibly stored on a computer-readable  
medium, comprising instructions operable to cause a programmable processor to:  
serially receive, from a source, a plurality of forward messages each addressed to one  
of a plurality of destinations;  
receive a plurality of availability signals, each availability signal indicating that one  
of the destinations is available to accept a forward message;  
simultaneously send a forward message to each available destination;  
simultaneously receive, after a predetermined period of time, a plurality of reverse  
messages from the destinations, each reverse message corresponding to one of the forward  
messages simultaneously sent to an available destination; and  
serially send the reverse messages to the source.

16. The computer program product of claim 15, wherein the source identifies each of the forward messages by a different tag, further comprising instructions operable to cause a programmable processor to:

5 place a tag in a delay buffer when sending to a destination the forward message identified by that tag, wherein the delay buffer implements a delay equal to the predetermined period of time such that the tag is available when receiving from memory the reverse message corresponding to the forward message; and

10 send the tag to the source with the reverse message, whereby the source associates the reverse message with the forward message.

17. The computer program product of claim 15, further comprising instructions operable to cause a programmable processor to:

associate a priority with each forward message; and

15 send a forward message to a destination when that forward message has a higher priority than other forward messages addressed to that destination.

18. The computer program product of claim 17, wherein the priority of each forward message represents an age of that forward message.

19. The computer program product of claim 15, further comprising instructions operable to cause a programmable processor to:

associate a priority with each reverse message; and

20 send a forward message to the source when that reverse message has a higher priority than other reverse messages.

20. The computer program product of claim 19, wherein the priority of each reverse message represents an age of that reverse message.

21. The computer program product of claim 15, wherein each destination is a memory bank, each forward message is a memory transaction, and each reverse message is the result of one of the memory transactions.